Vol. 52, pp. 187–196 December 15, 1939

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

MEXICAN HERPETOLOGICAL NOVELTIES.

BY HOBART M. SMITH.[1]

Among the specimens collected in Mexico during the months of October through March of 1938 and 1939, a few highly interesting novelties have come to light. Some of them are discussed in this paper.

A large proportion of the rarer material was discovered in one of two habitats not frequently searched: bromeliads and bananas. The former has been known for some time as a fruitful source of material, at least at certain times of the year. Dead and dry bromeliads were found to conceal many snakes; however, the snakes deserted them after heavy showers, during which the plants accumulated considerable water.

Bananas afforded the most amazing results. The loose outer leaves on the trunks of the plants hold sufficient moisture to protect amphibians during the dry season, when they seek refuge there in untold numbers. For example, in one large banana patch, three men including myself collected 537 specimens in two hours; had we saved all the specimens of the most common species (*Oedipus rufescens*) the number would have been nearer 750. The total number of species found in, on or under bananas in this region was 23.

The material discussed was secured through aid of the Walter Rathbone Bacon Travelling Scholarship. I am also deeply indebted to Mr. and Mrs. Dyfrig McH. Forbes for assistance in obtaining specimens, and to Dr. E. H. Taylor for aid in studying them.

Eleutherodactylus spatulatus, sp. nov.

(Figures 4 and 5, Plate II.)

Type.—Female, U. S. Nat. Mus., H. M. Smith field number 3787, January 5, 1939, Cuautlapan, Veracruz.

[1] Published by permission of the Secretary of the Smithsonian Institution.

Paratypes.—Seven, all from the type locality, collected on January 5 and 16, 1939 (numbers 3786, 3788, 4391, 4411, 4467, 4470, 4488).

Diagnosis.—Tips of digits expanded; disks with terminal transverse grooves, four times as broad as narrowest part of corresponding digit, twice size of tympanum; vocal sac present; a few large pustules on eyelid; a dark interorbital bar; limbs with distinct, dark bands; labia barred. Maximum size of female, 32 mm.; of male, 23.6 mm.

Description of type.—Head somewhat flattened; lores oblique, slightly concave; canthi distinct, rounded; tip of snout vertical; nares very near tip of snout, a very distinct median depression between them; diameter of eye equal to distance between eye and naris; interorbital distance slightly less than diameter of eye; tympanum vertically oval, nearly round, its greatest diameter considerably less than half that of orbit; a very distinct, supratympanic fold terminating posteriorly in a tubercle.

Vomerine teeth in two short groups between and behind posterior level of choanae, nearer each other than choanae; tongue subcircular, sides and posterior edge free.

First finger distinctly shorter than second, which in turn is distinctly shorter than the fourth; terminal disk of first finger very slightly expanded; disk of second finger a little more than half the width of disks of third and fourth fingers; latter disks nearly twice the size of tympanum; disks truncate, distinctly notched medially; subarticular tubercles of hand large, single; supernumerary tubercles present, small; an elongate tubercle at the base of first finger and another at base of third; no trace of web; three enlarged tubercles in a row on posteroventral margin of lower foreleg.

Tibio-tarsal articulation reaching a little in front of orbit; heels overlap slightly; subarticular tubercles of foot large, single; outer metatarsal tubercle elongate, padlike; inner metatarsal tubercle small, rounded; supernumerary tubercles small; tarsal fold present, not very distinct, beginning at inner metatarsal tubercle and extending nearly the full length of tarsus; disks on toes small, the largest (of fourth toe) somewhat smaller than disk of second finger; no trace of web.

Skin over most of dorsal surfaces rugose; a faint but distinct, very fine middorsal ridge extending from snout to anus; a dermal ridge extending from posterior border of orbit posteriorly and medially to a distinct tubercle on extreme posterior occipital region; a short series of tubercles, more or less continuous with the preceding ridge, continues in a posterolateral direction; a number of enlarged pustules on eyelid; ventral surfaces of body and hind legs distinctly granular; ventral disk very indistinct.

Color. Ground color of back olive-gray; large dark brown blotches on back forming on sides a barred effect made very distinct because of the white ground color of the sides; a crescentic black line on each side curving posteriorly from posterior corner of eye toward middle of back, extending posteriorly to a point above and behind axilla; limbs with distinct dark bands separated from each other by light interspaces subequal in width to the dark bands; these dark bands particularly distinct on concealed surfaces of hind leg.

A broad, dark interorbital bar, with a narrow anterior border; labia

Table of Measurements (in mm.).

Number	3788	3786	4391	4467	4488	4470	3787	4411
Sex	♂	♂	♂	♂	♀	♀	♀	♀
Snout to vent	22.2	22.6	23.0	23.6	27.5	31.0	31.0	32.0
Head length	7.7	7.6	7.8	8.3	9.7	10.0	10.0	10.0
Head width	8.5	8.6	9.2	9.2	11.2	11.1	12.8	12.8
Tympanum	1.1	1.2	1.2	1.3	1.6	1.6	1.6	1.5
Arm	16.8	17.6	16.0	16.7	22.0	22.0	24.0	24.7
Leg	39.0	39.0	38.2	39.0	55.2	52.0	57.5	57.0
Tibia	12.7	13.0	12.7	12.8	18.0	16.5	18.7	18.6
Foot	16.0	16.0	15.2	16.0	22.0	20.9	23.0	24.0

barred, the subocular bar very distinct; throat stippled with darker color; belly stippled, with white alveolae; ventral surfaces of limbs dimly mottled, the darker areas stippled.

Inner, maxillary flange of upper jaw stippled with darker color.

Variation. One female has a broad white line down the middle of the back. The interorbital dark bar is rather indistinct in some specimens. The markings on the back are irregular, except the crescentic suprascapular mark, which is constant in all. An oblique dark mark behind the axilla seems relatively constant.

Comparisons. The species most closely related to *spatulatus* is *alfredi*. The two form a group widely different from other Mexican species. The present species differs from *alfredi* in a number of characters, the most conspicuous of which is the much smaller tympanum. In *alfredi* its diameter is more than half (about two-thirds) the diameter of the eye, and equal to or greater than the width of the third fingertip. In *spatulatus* the diameter of the tympanum is less than half that of the eye, and only about half the width of the third fingertip. In *alfredi* the dark bands on the legs are indistinct and narrowly departed from each other by light interspaces; the back is more or less uniform olive gray, with scattered white flecks.

Habitat. All specimens were found in banana plants, in the axils of the trunk leaves. The species seems rather rare. *Eleutherodactylus alfredi* was found much more frequently in the same identical habitat.

Anotheca coronata (Stejneger).

(Figures 1, 2, 3 Plate I, and 6, Plate II.)

A large series of 103 specimens[2] of the rare *Gastrotheca coronata* Stejneger was secured in the months of January and February, 1939, at Cuautlapan, Veracruz. In densely shaded, mixed groves of coffee trees and banana plants, they were found in the axils of the loose outer leaves on the trunks of bananas. They did not appear to exist in plants exposed to open sunlight, or in small plants.

Previous knowledge of the species has been based upon two specimens. One is immature, from Córdova, Veracruz (British Museum 1930. 4. 10. 1); the other is an adult male (type) from Palomo, Valle de Orosi, Cartago, Costa Rica. The description of the type (Proc. U. S. Nat. Mus., 41, 1911, pp. 287–8) leaves no doubt that the Cuautlapan specimens are conspecific.

Females of *coronata* have the spines of the transverse occipital crest very poorly developed, while males have them strongly developed. Sexes may easily be distinguished on the basis of this character.

An examination of the females brought to light a highly interesting fact: there is no dorsal brood pouch. Other members of *Gastrotheca* do have a brood pouch so far as known.

Further, the sacral diapophyses (fig. 2) are strongly dilated. The terminal phalanges are claw-shaped.

These characters remove *coronata* not only from the genus *Gastrotheca*,

[2] Depósited in the National Museum; H. M. Smith field numbers 2575, 2924, 2928–33, 2935–6, 3199–3209, 3211–3, 3564–94, 3813, 3815–8, 3820, 3830–8, 4130–50, 4262–74.

but also from the subfamily Hemiphractinae.[3] Its association with the subfamily Hylinae seems clear.

There are no palatine or parasphenoid teeth; the snout is not produced forward; the internal metatarsal tubercle is not free; pupil round; mandible with no toothlike projections.

Certain peculiarities of the pectoral apparatus are shown in figure 1. A cartilaginous rod extends from the posteromedial margin of the procoracoid on each side to the internal surface of the sternum, to which it is attached by fascia. The girdle is arciferal.

The urostyle is peculiar in possessing a transverse process on each side near its base (fig. 3).

These characters in combination differentiate *coronata* from all other casque-headed Hylinae (*Diaglena, Triprion, Pternohyla, Nyctimantis, Hemiphractus, Corythomantis,* and a few *Hyla* species). I therefore propose the generic name *Anotheca* for it. Its diagnosis follows. Derm of head completely involved in the cranial ossification; posterior edge of casque studded with high, conical, erect bony spines; a similar series of spines above tympanum; supraorbital crest tubercular; canthus granular; vomerine teeth present; no palatine or pterygoid teeth; snout not produced; pupil round; internal metatarsal tubercle padlike; no marsupium.

Leiolopisma cherriei (Cope).

(Figure 7, Plate II.)

A series of thirteen specimens from Veracruz (U. S. Nat. Mus., H. M. Smith field nos. 1612–3, 1724–5, 2052–3, 2082–3, 2117, 2226, 2278–9, from Potrero Viejo, December 13 to 26, 1938; no. 2964, Cuautlapan, January 3, 1939) are not referable to any species generally recognized from Mexico. Dr. L. C. Stuart informs me that they are identical with *cherriei* specimens from Central America.

Diagnosis.—A member of the "Mocoa" group; 30 to 32 scale rows about the middle of the body; 65 to 72 transverse rows from occiput to base of tail (a line connecting posterior margins of thighs); adpressed limbs slightly separated (maximum five scales), touching or overlapping slightly (maximum three scales), usually overlapping in males, usually separated in females. It differs remarkably from *assatum* in having a *blue* tail instead of pink; lateral dark line complete to groin; sides of neck and abdomen darkly mottled; postocular stripe covering dorsal half of lower secondary temporal; primary temporal usually as long as high.

Description (from no. 2053, male).—Parietals enclose interparietal; frontoparietal entire; four supraoculars, second largest; frontal slightly longer than frontoparietal; two prefrontals, separated by contact of frontal and internasal; nasal entire; anterior loreal much higher than long, posterior loreal slightly higher than long; two superimposed preoculars; seven superciliaries, the anterior the largest; seven supralabials, the subocular (fifth) the longest, the sixth or seventh the highest.

Anterior temporal subequal in size to sixth supralabial, slightly higher than long, separated from parietal by a small scale; upper secondary tem-

[3] Noble, G. K. 1931. The biology of the amphibia. McGraw-Hill Book Co.

poral largest of all temporals, in contact with parietal; lower secondary temporal slightly smaller than anterior temporal.

Mental with a labial border somewhat greater than that of rostral; seven infralabials; one undivided postmental, larger than mental, followed by four postmentals on each side, separated from each other medially by one or more scales.

Ear slightly vertically oval, its longitudinal diameter two-thirds the distance between eye and posterior edge of nostril, and its vertical diameter two-thirds the diameter of orbit; diameter of orbit equal to distance between eye and anterior edge of nostril; distance between eye and ear equal to distance between eye and tip of snout.

Scales around middle of body 32; scales from parietals to base of tail 68; adpressed limbs separated by two scales; lamellar formula of fourth toes 17–18; diminutive tubercular keels present on lateral body scales, especially in lateral nuchal region, and behind axilla, but very indistinct.

Two median anal scales bounded laterally by two smaller scales on each side; scales preceding anals slightly enlarged; subcaudals slightly larger than dorsal caudals, not transversely enlarged.

Color.—Dorsal surface of body light brown, somewhat more olive middorsally; head uniform light brown above; tail dark olive-blue above, with numerous dark flecks; a few dark flecks in middorsal body region. A dark stripe beginning in loreal region, faintly visible about nostril, passes through the eye, above tympanum and axilla to groin, where it disappears; it is broadest (three scales wide) between ear and foreleg, and begins to taper and break up behind the foreleg; it occupies the lower half of the upper secondary temporal and the upper half of the lower secondary temporal; a dark streak below the anterior part of the eye; several dark spots on the supra- and infralabials; smaller dark flecks below ear and below lateral dark stripe on neck; still smaller and more numerous dark flecks on sides of body. Ventral surfaces immaculate save a few flecks on the sides of the gular region and scattered flecks on the tail. Base of tail faintly pink.

Comparisons.—Both subspecies of *assatum* possess pink tails, while *cherriei* has a blue tail. The lateral dark stripe passes above the lower secondary temporal in *assatum*, through it in *cherriei*. The sides of the body are mottled more strongly, and the general ground color is darker in the former than in the latter.

Differences in scutellation are minor. Usually the primary temporal is as long as or longer than broad in *cherriei*, broader than long in *assatum*.

The general habitus is different, *cherriei* having a more robust body than *assatum*. The tail appears to be proportionately longer.

Leptodeira frenata (Cope).

(Figure 8, Plate II.)

On December 28, 1938, and January 8, 1939, three specimens of *Leptodeira* (deposited in the U. S. Nat. Mus.; H. M. Smith field numbers 2356, 2357, 3771) were secured from dead, dry bromeliads near Palma Sola, about 10 miles east of San Juan de la Punta, Veracruz. The locality is on a very dry plain, characterized by scattered low trees, short grass and few palms.

Table of Measurements and Scale Counts of *Leiolopisma cherriei* (in mm.).

Number	2278	2279	1612	1725	2226	1724	2053	2117	2964	1613
Sex	yg	♂	♂	♂	♀	♂	♂	♂	♂	♀
Snout to vent	33.0	46.0	48.5	49.0	50.1	51.0	52.3	53.0	55.0	56.0
Snout to ear	2.1	2.8	3.0	3.0	2.9	3.3	3.2	3.2	3.7	3.0
Snout to foreleg	11.8	16.0	16.0	16.5	16.0	17.8	17.0	18.0	18.0	17.0
Axilla to groin	17.1	24.5	26.0	26.0	28.3	27.0	28.5	29.0	30.0	28.0
Tail	52.0	.....	.....	.....	.....	90.0	98.0	.....	82.0	.....
Head to parietal	5.9	7.5	8.0	8.0	8.0	8.5	8.5	8.5	9.0	8.0
Arm	7.3	10.2	11.0	11.2	10.1	11.3	12.0	11.2	11.3	10.0
Leg	10.2	16.0	17.8	17.0	16.5	18.0	18.0	17.5	18.0	17.0
Fourth toe	4.5	6.0	6.6	6.5	6.7	6.8	6.7	6.3	6.4	6.0
Scales around body	30	32	30	30	30	32	32	32	32	30
Dorsals	68	69	70	70	65	72	68	66	69	71
Lamellae 4th toe	18–19	20–21	18–19	18–18	17–17	17–18	17–18	17–18	20–20	16–18

The specimens seem referable to the rare *Sibon frenatum* described by Cope in 1886 (Proc. U. S. Nat. Mus., 9, p. 184) on the basis of a specimen from Jalapa, Veracruz. Since its description no further specimens have appeared in collections and, moreover, the single type has apparently been lost.

The type description, with emendations based on the present three specimens, follows:

"Scales in twenty-three longitudinal series [19–21–15 (♂), 21–21–17 (2 ♀), with very short intercalated rows on anterior part of body, in two specimens, bringing the maximum count to 23]. Body rather slender, tail rather short, head very distinct and depressed. Superior labials nine [by error; should be eight], eye resting on the fourth and fifth, and only separated from the third by the small inferior preocular. All are higher than long, excepting the eighth and ninth [eighth only], which are longer than high; the sixth and eleventh are the largest. Inferior labials, eleven [in error; should be ten; one specimen has nine]. Postgeneials much longer than pregeneials [equal or slightly longer]. Loreal plate subquadrate; oculars 2–2 [three preoculars on one side in one specimen]; the superior anterior not reaching the frontal plate [does on both sides of one specimen]. Temporals, 1–2–3. Frontal twice as long as wide [somewhat less in two], with parallel sides. Occipitals moderate, reaching to above middle of eighth superior labials.[4] Gastrosteges, 188 [183 ♂, 180 ♀, 178 ♀]; anals, 1–1; urosteges, 69 [79 ♂, 70 ♀, 65 ♀].

"*Colors.*—Above black [bands entirely black or with dark brown centers], below white [bands encroach on edges of ventrals]. At distance of from six to nine [four to ten] scales, narrow cross-bands of one scale in width [on or near middle of body] rise from the abdominal border color, and meet or terminate in alternating positions, on or near the middle line of the back. These bands are more or less gray, sometimes darker in the middle [and expand on sides of body to a width of two or three scales; on each side they usually enclose a small dark spot involving the first scale row and the edges of the adjacent ventrals]. The top of the head is gray densely mottled with blackish, leaving a crescentic space of light gray between a black spot behind the headshields and the beginning of the black of the superior surfaces. A broad, black band passes downwards and posteriorly from the eye, and crossing the angle of the mouth covers the side of the neck and unites with the black of the following regions. The superior labials are light gray with black borders; the dark borders of the inferior labials are less distinct.

"Total length, 305 mm. [483 mm. ♂, 496 mm. ♀, 532 mm. ♀]; of tail, 66 mm. [107 mm., 9.7 mm., 112 mm., respectively]; of head to canthus oris, 11 mm. No. 298 (of the Comisión Geográfica Exploradora de México collection exhibited at the New Orleans Exposition). Jalapa, Mexico."

[4] This statement leads me to believe Cope erred in counting nine supralabials (and therefore eleven infralabials), for in the present three specimens also the occipitals reach to the middle of the eighth (and last) supralabial. The scale following the eighth supralabial resembles a labial, but is not.

The number of bands on the body of the male is 26 or 27; of the females, 28 or 29 in one, 30 in the other. The number of tail bands in the male is 12 or 14; of the females, 12 or 14 in one, 11 or 12 in the other.

The fangs are strongly grooved.

Explanation of Figures.

Fig. 1. Ventral view of right half of pectoral girdle of *Anotheca coronata*. Cartilage lightly stippled.

Fig. 2. Sacral vertebra of *Anotheca coronata*. Cartilage lightly stippled.

Fig. 3. Urostyle of *Anotheca coronata*.

Fig. 4. Type of *Eleutherodactylus spatulatus*. Snout-vent measurement 32 mm.

Fig. 5. Paratype of *Eleutherodactylus spatulatus*. Snout-vent measurement 32 mm.

Fig. 6. *Anotheca coronata*, male.

Fig. 7. Left, *Leiolopisma assatum assatum*, E. H. Taylor–H. M. Smith collection number 10065, Tapachula, Chiapas, 48 mm. snout to vent. Right, *Leiolopisma cherriei*, H. M. Smith field number 2053, Potrero Viejo, Veracruz, snout-vent measurement 52.3 mm.

Fig. 8. *Leptodeira frenata*, male, 483 mm. total length.